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   Babu GJ, Wheeler D, Alzate O, Periasamy M.
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   Eur J Biochem. 1998 Mar 15;252(3):537-41.
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Are you looking for gene information? Search Gene Database

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Results: 4

1. Engineering inclusion bodies for non denaturing extraction of functional proteins.
   Peternel S, Grdadolnik J, Gaberc-Porekar V, Komel R.
   Microb Cell Fact. 2008 Dec 1;7:34.
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2. New properties of inclusion bodies with implications for biotechnology.
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CSF3 (GCSF) colony stimulating factor 3 (granulocyte) [Homo sapiens]

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Results: 3

1. New properties of inclusion bodies with implications for biotechnology.
   Peternel S, Jevsevar S, Bele M, Gaberc-Porekar V, Menart V.
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   Jevsevar S, Gaberc-Porekar V, Fonda I, Podobnik B, Grdadolnik J, Menart V.
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Production of nonclassical inclusion bodies from which correctly folded protein can be extracted.

Jevsevar S, Gaberc-Porekar V, Fonda I, Podobnik B, Grdadolnik J, Menart V.

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Abstract

Human granulocyte-colony stimulating factor (hG-CSF), an important biopharmaceutical drug used in oncology, is currently produced mainly in Escherichia coli. Expression of human hG-CSF gene in E. coli is very low, and therefore a semisynthetic, codon-optimized hG-CSF gene was designed and subcloned into pET expression plasmids. This led to a yield of over 50% of the total cellular proteins. We designed a new approach to biosynthesis at low temperature, enabling the formation of "nonclassical" inclusion bodies from which correctly folded protein can be readily extracted by nondenaturing solvents, such as mild detergents or low concentrations of polar solvents such as DMSO and nondetergent sulfobetaines. FT-IR analysis confirmed different nature of inclusion bodies with respect to the growth temperature and indicated presence of high amounts of very likely correctly folded reduced hG-CSF in nonclassical inclusion bodies. The yield of correctly folded, functional hG-CSF obtained in this way exceeded 40% of the total hG-CSF produced in the cells and is almost completely extractable under nondenaturing conditions. The absence of the need to include a denaturation/renaturation step in the purification process allows the development of more efficient processes characterized by higher yields and lower costs and involving environment-friendly technologies. The technology presented works successfully at the 50-L scale, producing nonclassical inclusion bodies of the same quality. The approach developed for the production of hG-CSF could be extended to other proteins; thus, a broader potential for industrial exploitation is envisaged.

PMID: 15801811 [PubMed - indexed for MEDLINE]